

**Abstract****Hybrid microfluidic chip and method for manufacturing same**

The invention concerns an electrically active hybrid biochip equipped with a printed circuit wafer provided with a polymer support, whereof one surface at least comprises an electrically conductive layer with several electrodes. On the said electrically conductive layer are applied one or more acrylic polymer or resist layers of epoxy resin, phenol resin, silicone resin or fluorinated polymer, the said layers being structured by photolithography or by electronic beam and applied while leaving exposed at least one of the electrodes. The microfluidic system further comprises a material layer for microchannels with an outer surface wherein are arranged recesses forming microchannels, the said material layer comprising PDMS (polydimethylsiloxane, SYLGARD®, DOW Coming), other organic siloxanes and their polymerization products, silicones, polyacrylates (such as PMMA) and/or elastomers with functional groups containing oxygen and/or nitrogen (for example, polysulphone, polyimide, polycarbonate and/or polyacrylnitrile). The outer surface comprising recesses of the material layer for microchannels is in contact with the photosensitive resist layer of the printed circuit wafer such that the two electrodes are aligned with one of the recesses arranged in the lithography-structured resist layer, the outer surface of the material layer being in sealed fluid communication with the polymer or resist layer of the printed circuit wafer.

(Fig. 2)